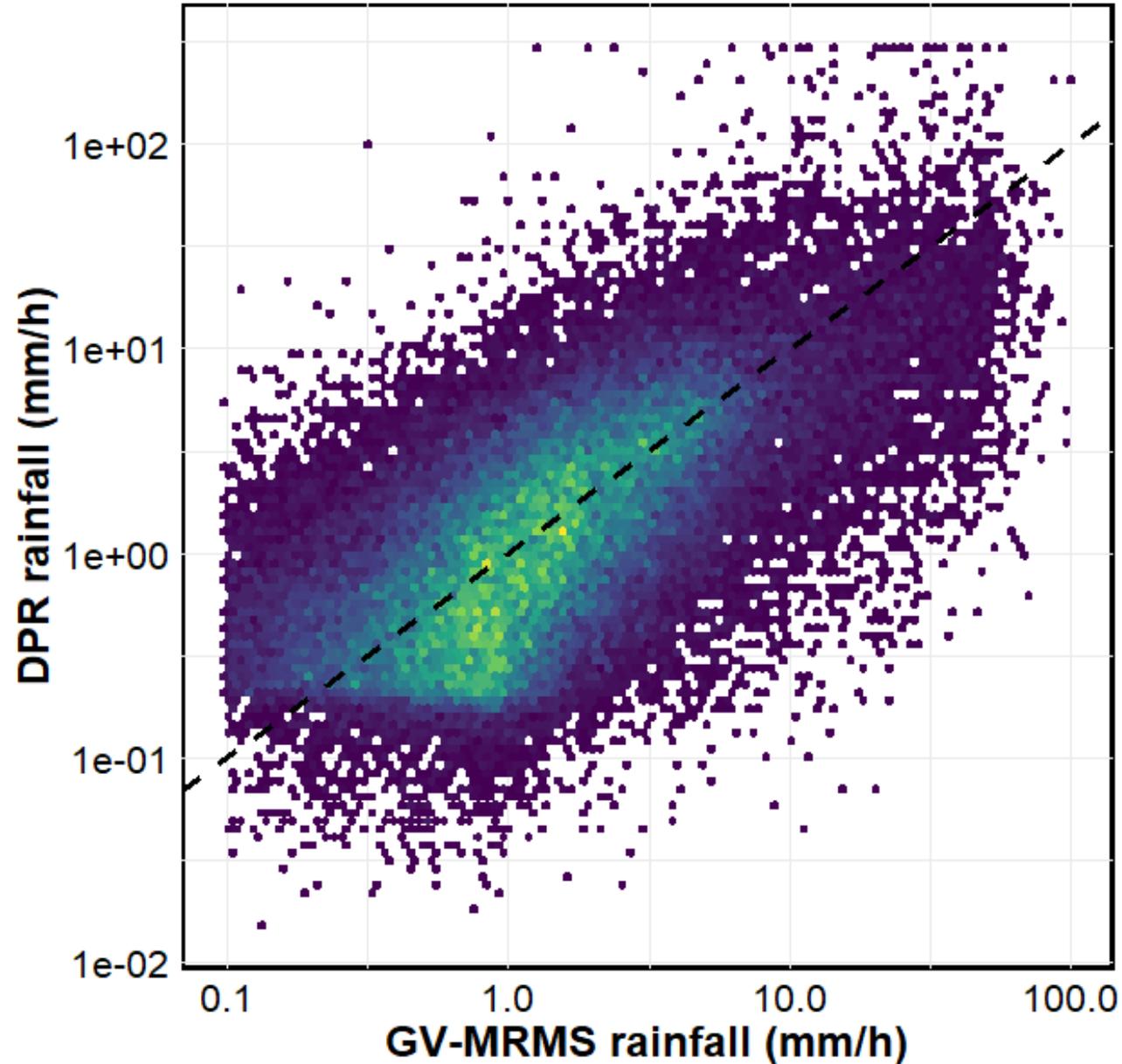


# GPM Mentorship Program 2022 - MENTORSHIP STAGE PROJECT PRESENTATION

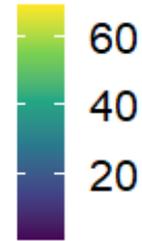
## OVERVIEW OF PROJECT

- Ground validation analysis of GPM product (DPR)
  - Get acquainted with the data
  - Determine data quality through quantification and detection analysis
  - Implement various validation techniques
- Data used:
  - GPM DPR (Merged scan)
  - GV-MRMS – quality controlled reference dataset
- Study Area:
  - Continental United States
- Methodology:
  - Data visualization
  - Categorical analysis
  - Statistical analysis
- Proposed future work:
  - Validation GPM DPR at different study area (home region)

# Data visualization: density scatter plot

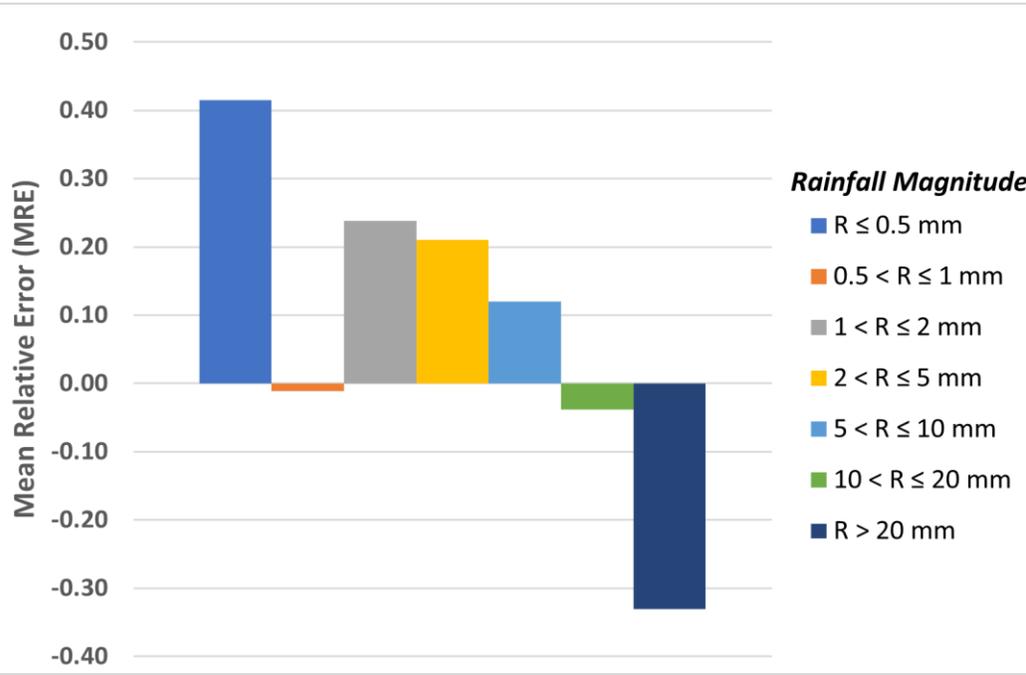
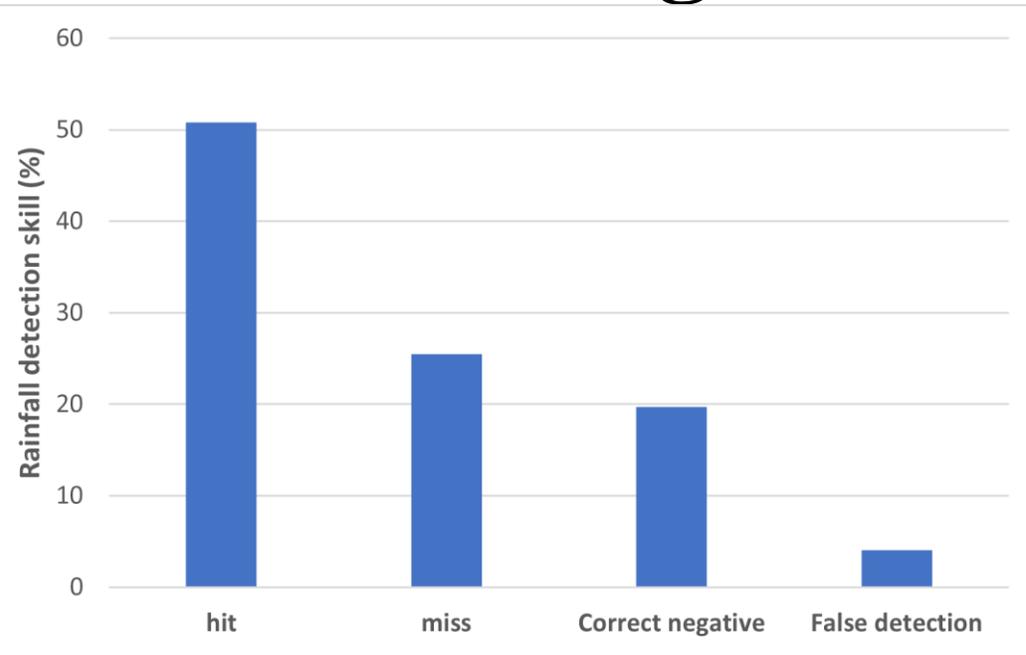


**Samples/bin**



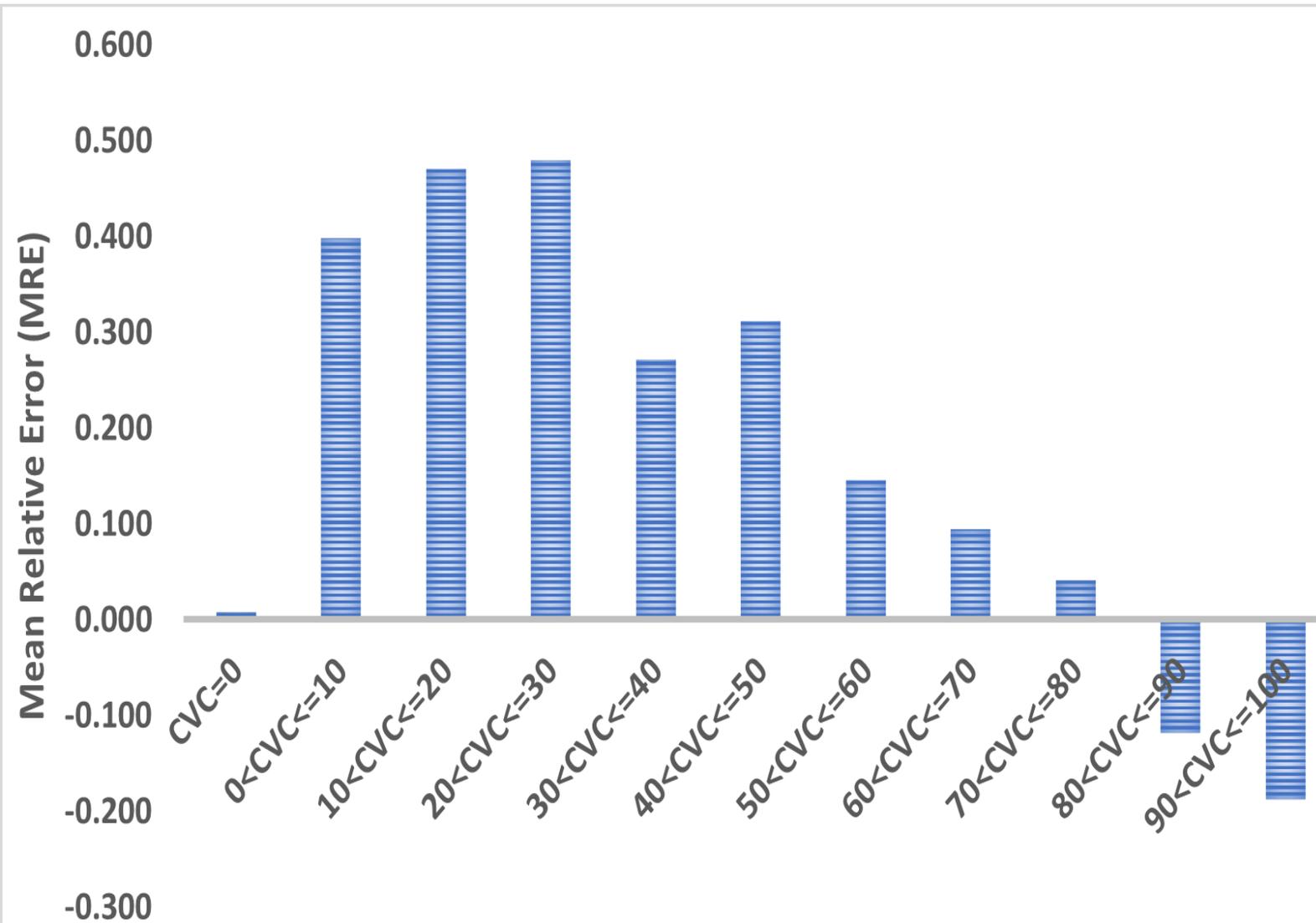
- Large spread of values around 1: 1 line
- Rainfall under-estimation by DPR around 1.0 mm h<sup>-1</sup>
- Most frequently occurring rainfall intensities fell below 10 mm h<sup>-1</sup>

# Categorical and Statistical Analysis



- DPR correctly detected rainfall over 70% of the time
- 25% of GV-MRMS rainfall events were missed by DPR
- DPR is less likely to falsely detect rainfall ( $< 5\%$ )
- Rainfall over-estimation was predominantly recorded at lower thresholds ( $R \leq 10 \text{ mm h}^{-1}$ )
- Maximum over-estimation ( $> 40\%$ ) was recorded at  $R \leq 0.5 \text{ mm h}^{-1}$
- At  $R > 20 \text{ mm h}^{-1}$ , DPR greatly under-estimated rainfall by over 30%

# Statistical Analysis: Convective Volume Contribution (CVC)



- Least MRE recorded at CVC = 0 (stratiform type rainfall)
- Rainfall over-estimation increased from CVC = 0 to CVC = 30%, decline afterwards
- DPR under-estimated higher percentage CVC (> 80 %)